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ABSTRACT

This paper reports on an experimental multimedia project in a preservice teacher education course at the University of Guam. The multimedia project was aligned with the critical pedagogy in cultivating transformative intellectuals. Participants of the project investigated critical issues in their communities and presented their projects by using a multimedia tool. By doing this project, students developed their awareness of critical issues in their communities and the role educators could play in changing the situation. It was found that technology sustained students' motivation and interest, enhanced the challenge of the project, and unleashed students' creativity. The paper argues that technology can be a powerful tool in support of the pursuit of transformative pedagogy. (Author/AEF)

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Design for Transforming: Multimedia Projects in a Preservice Educational Computing Course

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Abstract: This paper reported an experimental multimedia project in a preservice teacher education course. The multimedia project was aligned with the critical pedagogy in cultivating transformative intellectuals. Participants of the project investigated critical issues in their communities and presented their projects by using a multimedia tool. By doing this project, students developed their awareness of critical issues in their communities and the role educators could play in changing the situation. It was found that technology sustained students' motivation and interest, enhanced the challenge of the project and unleashed students' creativity. The paper argues that technology can be a powerful tool in support of the pursuit of transformative pedagogy.

Introduction

I teach instructional technology at the University of Guam. The majority of my students are education majors, with a few from other departments such as business, psychology, political science, and English. In my class, students learned the use of the computer as well as its applications in classroom teaching. However, I was bothered by one assignment - multimedia project. For this assignment, students were required to create something they could use in classroom teaching by using a piece of multimedia software, *hyperstudio*. Frequently, student projects lacked depth. Their multimedia stacks were superficial, just dotted with bells and whistles. Worse, some of the students simply copied from textbooks and translated text format into its electronic format. Why such a powerful technology led students to passivity rather than creativity? I reacted to students' projects with similar passivity; going over the projects in a routine manner of assigning grades and at the same time, feeling bored to death, viewing these projects.

This experience led me to search for alternative approaches. In this process, I became particularly interested in "transformative pedagogy." Transformative pedagogy considers the goal of education is to instill critical citizenship into students and prepare them for the role of transformative intellectuals. Transformative intellectuals are responsible and active citizens in communities, who take an active role in transforming the society through various forms of democratic participation and social action (Giroux & Mclaren, 1986; Cummins & Dennis, 1995). In classroom learning and curriculum organization, transformative pedagogy advocates collaborative critical inquiry. "Transformative pedagogy uses collaborative critical inquiry to relate curriculum content to students' individual and collective experience and to analyze broader social issues relevant to their lives (Cummins & Dennis, 1995; p. 153). Freire's approach in literacy education is an exemplary example of utilizing literacy acquisition as a means to transform learners into change agents of social realities (Freire, 1989).

Transformative pedagogy makes me view technology learning from a new perspective. As critical literacy acquisition, could I find a way to relate technology learning to students' personal and collective experience? Would it be possible to embed technology learning in a meaningful context? Could technology play a role in preparing students to be transformative intellectuals? With these questions in my mind, I redesigned the multimedia assignment for my course. Students would jointly investigate critical issues on Guam and develop curriculum integrating these issues. They would design and present their projects by using a multimedia tool.

Literature Review

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Instructional Technology (IT) has had a long involvement with learning theories. There has been an overwhelming amount of discussion on the role of technology to support the pursuit of a certain learning theory, from behaviorism to constructivism, with a host of other concurrent learning theories such as problem-based learning, project-based learning, situated learning, anchored learning, and contexted learning; to name just a few.

Learning theories provided a psychological basis for IT learning. However, education is not merely a psychological process. "Education either functions as an instrument to facilitate the integration of the younger generation into the logic of the present system and bring about conformity to it, or it becomes the means by which men and women deal critically and creatively with reality and discover how to participate in the transformation of their world" (Shaull, 1989; p.15).

Early in the century, John Dewey (1968) warned that schools should not merely become an adjunct to the society. There is a standing danger that "Education would then become an instrument of perpetuating unchanged the existing industrial order of society, instead of operating as a means of its transformation" (p. 316). However, "the capturing of educational discourse by psychology has markedly weakened our ability to respond to the crisis as something that is of crucial importance in an education worthy of its name" (Apple, 1986; p. 4).

"There is no such thing as a *neutral* educational process" (Shaull, 1989; p.15). Education serves the human society as an essential ideological instrument. History taught us a bloody and costly lesson "when in 1935, the great trainer Hitler whistled his commands, a hundred thousand obedient, fawning dogs wag their tails in the Templehof, Berlin" (Neill, 1960; p. 100).

School routinely ignores the social and political aspect of learning. Current school curriculum fails to provide meaningful connection between classroom learning and the real life students are living. "The result of this disparity between the nature of schools and the students who attend them is disaffection, apathy, and failure" (Mason, 1996; p. 265). Advin Toffler (1980), the author of the landmark book *The Third Wave*, pointed out that current education in schools is out of touch with a society exploding with complexity. "Most students have no conception of the architecture of their own city's economy, or the way the local bureaucracy operates, or the place to go to lodge a complaint against a merchant. Most do not even understand how their own schools-even universities-are structured, let alone how much structures are changing under the impact of the Third Wave" (p. 377).

Teacher education plays an essential role in cultivating transformative intellectuals. The goal of teacher education is not merely helping prospective teachers to become experts in subject matters, but also helping them to develop democratic and critical perspectives on education. However, there has been a trend to confine teacher education narrowly to content knowledge (Pietig, 1997). Goldman and Fish (1997) interviewed 15 students in teacher education on the issue of social equity, only five of them thought the concern of social equity would be at the center of their teaching. "Most university coursework emphasized progressive educational views but contained little about the social and political implications of education" (Goldman & Fish, 1997; p. 101).

Teacher education can no longer remain unconcerned with preparing students to be transformative intellectuals. This goal needs to be integrated into teacher education curriculum and addressed explicitly. As curriculum is by no means politically neutral, neither is technology. Technology can be used to support the pursuit of one form of pedagogy or another. This study explored the role of technology in support of the pursuit of transformative pedagogy.

About Guam

The island of Guam is a U.S. territory in the Western Pacific Rim, between Hawaii and Philippines. Guam is the largest and most populated of the Marianas islands. Guam is about thirty miles long and eight miles wide with a population of 146,000. "Guam's political status as an American territory and its pivotal role in Pacific

transportation and communications have made Guam economically and socially distinct from its Micronesian neighbors" (Schmitz & Pono, 1995; p. 62).

Methodology

Data collection covered a period of six semesters with about 150 participants. The multimedia project lasted for about 3 weeks each semester. Students investigated critical issues on Guam and presented their findings using a multimedia tool. To mitigate researcher/instructor bias, data were collected from multiple sources; classroom observation, interviews, and evaluation of students' multimedia projects.

Findings

A variety of topics emerged; traffic accidents, drug abuse, teenage smoking, domestic violence, child abuse, AIDS on Guam, young gangs, graffiti, teenage pregnancy, recycling, water resources, and student dropouts. Students' research alarmed the class, revealing a community plagued with serious problems. For example, in 1997, there were 9674 traffic accidents on the Guam. Over half of the traffic fatalities were alcohol related. Drug abuse is rapidly increasing, affecting four out of five families. There are about 15,000 ice users on Guam. Police arrested more than 300 ice users in 1997 compared with less than 100 in 1993. The youngest ice addict was 8 years old. At least 10% of teenage girls get pregnant each year, and 90% of them were not married. Guam's major landfill exceeded its life span three or four years ago, but the government could not close the facility without a new, sanitary landfill to accept the island's garbage. The overflowing landfill has contaminated the river and breeds rats, flies and other pests.

Students' Awareness

As students researched their topics, they became keenly aware of the seriousness of these issues. As one student put it: "Well, we did not know that drug issue was so critical, we knew there was a concern. But when we look at statistical data, that's when we were overwhelmed. When we did research, we found it was a very crucial area."

Students' concern for their community became the driving force for them to carry out their projects. Fueled with this motivation, students were willing to invest their time and efforts. "You are doing a service for the community by doing something like this, and you understand where you live and plus you can get the information back to your community, which is a good thing. At least, you know, give something back to the community."

Students felt they were deeply involved in this research project because they were investigating issues that were crucial and relevant to themselves, their family members, and their community. "These issues affect everybody." One group of students investigated AIDS on Guam. When they showed the class the data about AIDS on Guam, they told the class: "Don't think of this only as statistics, think of them as human beings with flesh and blood. They can be your cousins, your friends and your family members."

Get to Know the Issue Well

Students worked hard to understand the investigated issues. Their research went into depth. They studied the literature of these issues to bring a historical perspective into their research. What was the first case of AIDS? When was the first publicized document on danger of smoking? One group found an article on the Internet on traffic accidents which they felt very informative. They quoted: "The first death I caused was the death of Mr. Henry H. Bliss, a real estate broker, in New York, September 13, 1899. Since that first recorded death, I have been responsible for twice as many deaths as all of the wars in which the United States has been involved."

Students visited different agencies, organizations and schools to bring multiple perspectives into their research. They surveyed school students to find out their perspectives on these issues. "What we thought was the main reason for kids to do graffiti was not their reason. They gave us the whole bunch of different reasons. It was interesting, because we finally realized that it is not just the issue that kids were bad. We found that from their perspectives, they were just bored. They just want to go there and do something. That ties in to the community and school to offer some activities for kids, or something kids can help with."

Students interviewed school counselors, teachers, parents, former gang members, former drug addicts, former drug dealers, teenage mothers, school dropouts, law enforcement officers, village mayors, and community people to listen to their voices. Here are some excerpts from their interviews.

> I found out in High School that it is better to make a friend than an enemy. I realized if they (gang) really wanted to be my friend that I didn't have to do all the things that they did (drugs). (former gang member)
>
> I quit school because I always fought with my classmates. There was no one to be friend with because they were all from Guam, and they thought they are perfect. Because I was brown and I did not wear fancy clothes, they do not like me. They laughed at my English sometimes. I do not care because I was smarter, but they only hurt my feelings and I was left out. I told my mom about this and she kept telling me to go back to school. To ignore them and study. However, I can't, I really was willing to stab someone. Luckily my teacher found my small knife in my pocket. (High School Dropout)
>
> Wait till you are much older. It is very hard having a baby because you don't have a job to support your baby and yourself. (Teenage mother)
>
> My advice to kids is don't do it, it is not worth it. Stay off of it. Listen to what everybody is saying. It is physically bad for you and it deteriorates your body. (former drug dealer)
>
> I can only say, don't give in to peer pressure. If you are curious like I was, the best way to find out is to read about it. Also, don't associate with people who might be doing drugs. Stay away. (former drug user)

Educators' Role

Students highly agreed that they need to raise the awareness of Guam communities on these issues. They commented:

> "I don't think there is enough awareness of these critical issues in our communities. We should always instill that in our students that these issues are on us and they should always be aware of them."
>
> Students need to be given to exposure to know about their environment, learn that these issues are happening around them, and ... know the different agencies or the people they could go to get help -- even just discuss the issue, you know, it makes difference
>
> I feel that you need to educate them when they are young. You can start at elementary and educate them that AIDS is bad. Some teachers shy away from it. If you start to teach them at a young age, even at elementary school, they will grow with that perspective. I don't think they instruct that at any schools here.

Students suggested school and classroom activities to teach these issues. For example, teachers can invite guest speakers, such as former drug users, former gang members to talk about the issues; organize fund-raising to help recycling; take children to a field trip to help clean up graffiti, to interview maintenance workers about his/her feelings on cleaning up graffiti; organize AIDS Awareness Week, Red Ribbon Week, AIDS candle light night.

Students included ideas in their projects to integrate these issues into the curriculum. Drugs, smoking, AIDS, teenage pregnancy can be integrated into health science class. In art class, students can design AIDS quilt; for recycling, students can make bottle vases using used bottles and magazines. One group of students showed the class the bottle vase they made. It was a piece of colorful and beautiful artwork. Another group of students expanded that idea of making bottle vases. They suggested that students could actually put photos of the classmates around the vase to make it memorable. In language arts class, students can write poems, journals,

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stories and papers on these critical issues. One group included a sample of poems they wrote to demonstrate the power of poems in educating students on these issues. They wrote "Eulogy to a Smoker" and "Ode to a Smoker", which were full of humor and wit. Creative alphabet writing integrate these issues into literacy development. For example, A is for Abstinence, B is for Blood. E is for Education, I is for Immune System. J is for "Just say No. Teachers can create word puzzles to ask students to identify body parts that can be affected by drug abuse. In math class, recycled cans can be used to practice student counting skills.

Technology's Role

Multimedia - the Right Way!

Technology supported students both affectively and cognitively. Technology sustained students' motivation and interest, enhanced the challenge of the project, provided access to information, unleashed students' creativity and fostered students' self-esteem and self-confidence. Here are some comments from students:

> I think the most exciting part was to put it in the computer and use all these design such as animation, sound, and everything. That's the part we like the best. Everybody was enjoying it. Especially with the poem we had, we want it to hit our audience, we want our audience to feel the pain.
>
> It is better for our project to be presented as multimedia. We want our project to be appealing. As the person [the user] goes through the cards, he is being introduced to the information and they need to interact with the program, so it gets them to be involved, and I think that will make the person get the point of the stack, because they are interacting with it.
>
> I like multimedia. The project is informative. If you use it in school, students will have fun clicking on it. They will like it. They like the sound and the music. They will enjoy using it because it is not boring. It is not like, open your book to page five and read what AIDS is. It is not just books.

Developing Higher Order Thinking Skills

Producing a multimedia product is a highly cognitive process. "Our belief is that producing hypermedia and multimedia products is among the most complete and engaging of the constructivist/constructionist activities (Jonassen 1996, p. 94). In a multimedia environment, information can be organized in a non-linear and non-sequential way, which is called "hypertext". That challenged students to break away from traditional linear and sequential thinking processes and presenting modes. Students need to identify the relationship between information so that they could link them in a meaningful way. Hypertext served as an advanced organizer structuring students' thinking process. It helped students organize their thinking and explore the issues at a deeper level to find out logical connections between pieces of information, thus practicing their higher order thinking skills.

Design and Creativity

Multimedia provided multiple and active mode to represent students' ideas. Students could utilize music, graphics, animation, and video clips to communicate their ideas and their emotions as well. With great interest, students worked hard on their design, often going into detail. Students evaluated a graphic, a color, a sound, a font, and a button icon in the light of whether its use would enhance the quality of their presentation. No longer did they treat these resources as bells and whistles. They are there to convey meanings: pictures of traffic accidents, voice of a AIDS victim, a video clip of a Guam overflowing landfill. Everything was charged with meaning. Students were willing to take the risk in experimenting different designs, trying out alternatives until they were satisfied with the effect.

The group who studied teenage smoking used a graphic of a skeleton as a major button icon. They also input a hysterical coughing sound into the icon. The user can hear the hysterical coughing each time she/he clicks on the button to navigate through the stack. The recycling group chose to use a globe as a major navigation button

icon, reminding the user the importance of protecting our environment. Driving Under Influence group used the song at Princess Diana's funeral as closing music. The whole class felt silent when a poem scrolled up the screen and the song started to play. As one of the presenters put it: "We decided to use it because that was a strong song, especially for Princess Di. Everybody remembers her so if they hear the song, they know what to think. They know her driver was drunk."

By doing the project, students learned technology well. They told me: "We learned by hands-on experience." "Now I can use this piece of software to create anything, it is just a piece of cake for me." What was more important, they learned how to apply technology in a meaningful way. "It will be boring if you just learn computer itself. It is better to integrate other types of learning. That is what education is all about."

Self-Esteem and Self-Confidence

Technology played a major role in fostering student self-esteem and self-confidence. Students' responses were overwhelming:

> I think the pleasant thing was that being able to create something using computers, that was the thing that makes us feel good because you are creating something on your own, and it is like, that is mine, I did that.
>
> Well, today I did not think I would be this satisfied. But when you got the your presentation, boy, you are just going to be in another cloud. It is really good feeling to be able to do something and say, I did that.
>
> It is just feels good presenting our project. Then there is a sense of accomplishment. When you look at your project, you just kind of say to yourself, I did this, our group did this. And it is such a meaningful project.

Conclusion

I'd like to use an incident as the conclusion of this paper. One day, as I was on my way to the office, I noticed a group of students were campaigning for AIDS awareness on the campus. They set up a table and pass information and red ribbons to passers-by. As I came closer, I recognized they were students in my class, now doing AIDS projects. They pinned a red ribbon on the collar of my dress, which I wore for many, many days.

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